

# A RETROSPECTIVE OF EVALUATION MODELS ON INTELLECTUAL CAPITAL

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*In the classical theory of economics, capital is one of the three factors of production, in addition to land and labor, and refers in particular to buildings, equipment, and machinery etc., used for the production of other goods (the term physical capital is also used by the specialized literature) (Brătianu & Jianu, 2006). The present study intend to bring to the forefront the main evaluation methods for intellectual capital, as proposed, supported and criticized at the same time by researchers and practitioners. The study offers response to the following research questions: Which are the advantages and disadvantages of the intellectual capital evaluation methods? And what are the main studies approaching the subject of intellectual capital evaluation at international level? The collection and analysis of intellectual capital evaluation models and the non-participative observation are the main instruments used to bring to the forefront the main international existing evaluation frameworks. The information sources representing the base for these researches are especially constituted by articles published in specialized magazines, both from accounting and economics fields, specialized works relevant to the reference field, legislative documents, official documents, press releases and other documents issued by various national and international bodies. The most representative studies bringing to the forefront the evaluation of intellectual capital are the ones elaborated by Mouritsen et al (Mouritsen et al, 2001), Manea and Gorgan (Manea and Gorgan, 2003), Tayles (Tayles, 2002), Tayles et al (Tayles et al, 2007). The presented approaches offer a general idea on the range of methods, disciplines and operational specializations existing for the evaluation of intellectual capital. Only one of them - Balanced Scorecard – is largely used, while the rest of the methods remain too theoretical or too poorly developed to be universally accepted. We believe that the efforts from the regulation and standardization bodies in the view of intellectual capital evaluation are too small, despite the fact that community shows an increased interest in this sense, many companies being tempted to build their own system of evaluating performances with regards to intellectual capital.*

*Keywords: intellectual capital, evaluation models, companies, Balanced Scorecard, international level*

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## **1.Introduction**

The use of the term „capital” alongside with „intellectual” evidences the presence of such a capital, different from the financial and physical capital (Peltoniemi, 2006). This concept („intellectual capital”) has been initially and soundly defined and argued for by Thomas A. Stewart, one of the editors from the famous American *Fortune* magazine. According to him, intellectual capital is that intangible capital representing the sum of everything each employee knows to do in a company and which can be used for developing its competitiveness (Stewart, 1997). The evaluation of intellectual capital became an important research field for practitioners and researchers ever since the 90s. The epistemological proceedings on the problematic of evaluation can be grouped into two large categories: the positive / regulatory approaches according to which the whole can be best understood by dividing it into isolated pieces and by summing up afterwards the knowledge obtained about each piece; and the interpretive / constructive approaches according to which the whole can be best understood by first hand experimentation, intuition and empathy. The evaluation of intellectual capital is part of the positive / regulatory theories of knowledge (Curaj, 2008) despite the fact that many researchers today give a distinct importance to interpretive theories or approaches.

By means of the present study we have intended to bring to the forefront the main evaluation methods for intellectual capital, as proposed, supported and criticized at the same time by researchers and practitioners. The study offers response to the following research questions:

- Which are the advantages and disadvantages of the intellectual capital evaluation methods?
- What are the main studies approaching the subject of intellectual capital evaluation at international level?

## **2. Analysis of Literature**

In order to reflect the status of knowledge in this field, we have analyzed the content of the main articles published in ISI<sup>21</sup> listed international journals for the period between 2000 until present days: *Accounting and Business Research (ABR)*, *Accounting Horizons (AH)*, *Accounting, Organization & Society (AOS)*, *Accounting Review (AR)*, *Australian Accounting Review (AAR)*, *European Accounting Review (EAR)*, *Management Accounting Research (MAR)* and *Asia-Pacific Journal of Accounting and Economics (APJAE)*, BDI<sup>22</sup>: *Accounting, Auditing & Accountability Journal (AAAJ)* and *Critical Perspectives on Accounting (CPA)* and national BDI journals: *Journal of Accounting and Management Information Systems (JAMIS)*, articles approaching the evaluation of intellectual capital by means of various methods or models. From the articles approaching the theme of intellectual capital having been published in the previously mentioned BDI indexed and ISI listed journals, the evaluation models like Skandia, Sveiby, Roos, TBIA, are approached but in a very small ratio, of 4%. The most representative studies bringing to the forefront the evaluation of intellectual capital are the ones elaborated by Mouritsen et al (Mouritsen et al, 2001), Manea and Gorgan (Manea and Gorgan, 2003), Tayles (Tayles, 2002), Tayles et al (Tayles et al, 2007), which approach models like Skandia, Balanced Scorecard, Sveiby, Roos, TBIA.

## **3. Research Methodology**

With regards to research currents, the present work is included in the main research current, with a positive, constructive intent. The collection and analysis of intellectual capital evaluation models and the non-participative observation are the main instruments used to bring to the forefront the main international existing evaluation frameworks. The information sources representing the base for these researches are especially constituted by articles published in specialized magazines, both from accounting and economics fields, specialized works relevant to the reference field, legislative documents, official documents, press releases and other documents issued by various national and international bodies.

## **4. Research Results**

The main methods for evaluation of intellectual capital, proposed, supported and at the same time criticized by researchers and practitioners can be split up into two main categories: generic and individual models. As part of generic models, we would mention: the BSC Model (balanced scorecard), the Performance Prism, the knowledge assets map model, the added value approach, the market or value based approach, Tobin's q model, the Baruch Lev method – association of incomes with assets, the intellectual capital's added value coefficient.

*1. The BSC Model (balanced scorecard).* In 1992 Robert Kaplan and David Norton (Kaplan and Norton, 1992) have launched the BSC model, which has evolved from status of evaluation program to a strategies implementation instrument. It represents a set of cause-effect relations amongst the results evaluation instruments and the performance levers from four points of view: financial

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<sup>21</sup> ISI listed journals = journals included in the Web of Science: Science Citation Index Expanded, Social Sciences Citation Index and Arts & Humanities Citation Index

<sup>22</sup> BDI journals = journals indexed in international databases

measures, customer related measures, internal process related measures and measures related to improvement and development. Presently, Kaplan and Norton underline the significance of visualizing the causality relation between the measures and the objectives seen as strategic maps, representing in fact communication instruments visualizing a company's strategy, the processes and systems required for the implementation thereof. Although Kaplan and Norton consider that each company must choose their own measures, many have criticized the BSC model, deeming it to be limited, because it does not take into consideration the relations with vendors and other important stakeholders.

*2.The Performance Prism.* The main advantage of this model consists in the fact that it addresses all users – not just investors but also customers and other intermediates, employees, suppliers, communities, etc. by adopting two methods in this respect: it considers the requirements of users and what the company wishes from its users. The model's flexibility makes it applicable to any company or organizational element. The attention towards non-corporal levers makes the model useful for companies trying to evaluate their intellectual capital. It also creates a map of various interacting areas of performance, explaining particularly the fact that each of the 5 faces of the prism should be covered in a so-called success map, thus avoiding the limitation, often criticized, of the BSC model.

*3.Knowledge Assets Map Model.* This model approaches the company from the point of view of knowledge assets, being based on the interpretation of the company's intellectual capital elements as a sum of two organizational resources: *stakeholder type resources and structural resources*. The model has been especially created to help entities identify and evaluate intellectual capital and its contribution to the creation of value. Once identified, the important elements of intellectual capital can be easily integrated into more comprising models such as the performance prism.

*4.Added Value Approach.* This evaluation technique has been suggested by Robinson and Kleiner (1996) and it has a framework from two perspectives. The first one utilizes the concept of value chain belonging to Porter. From an industrial perspective, the basic premise is the fact that raw material enters in one end of the chain and, as passing through the processes that will eventually convert it into finished products, value becomes added to it. Production is not the only involved function, raw material having to be purchased and finished products marketed and sold. The entire procedure must also be managed and administered. The key point is that all these internal functions must serve the company's general purpose, that of creating value for its customers. The second part of the framework makes reference to the theory of the economic value added (EVA), rooted in the enterprise finances and developed by Stern Stewart, a New York consultancy company. If the capital entry following any project is larger than the capital cost, then the company should continue that project. The basic objective of EVA is to develop a performance measure that could control the ways in which value can be added or lost within the company.

*5.Market Approach or Value Based.* A simple way to calculate the value of intellectual capital of a company is by considering the difference between its market value – number of issued shares, multiplied by the share's market value – and the net value of its assets. This can be done with a minimum of information and the difference between the indicators is often used as a clue showing that a company more elements of intellectual capital than presented in the annual statements.

*6.Tobin's q model.* The "q" element, proposed by the economist James Tobin represents the ratio between the company's market value and the cost for replacing its assets. In case the later is smaller, then the company records a higher yield than normal. The technological assets and human capital have been traditionally associated with high q values. One might claim that Tobin's q method is highly more accurate than the method based on value because it rather uses the replacement cost than the historical cost. However, finding these replacement costs is much more difficult than the simple reduction to a balance sheet. The model also presents several disadvantages, just like the other models, because it uses market value as a key measure. Tobin's q

model cannot offer an exact figure for the individual intellectual assets. Their actual value consists in analyzing the trends; a decreasing  $q$  implies that the company does not manage its intellectual assets in an efficient way or that the investors' attitude has changed.

*7.Baruch Lev Method – association of incomes with assets.* Baruch Lev, professor at Stern School of Business, New York University, has proposed a method that associates the incomes with the assets generating the incomes. The method uses both gains and assets as data sources and does not focus exclusively on assets. By associating assets with gains, companies could obtain a turnover they can use to make comparisons with other companies or merely to indicate whether their incomes from intellectual assets are decreasing or increasing. However, like some of the previous methods, it leads to a single figure for intellectual assets and does not consider individual components.

*8.The Intellectual Capital's Added Value Coefficient.* This method calculates the difference between sales and all inputs, divided by the intellectual capital, which is estimated as the total labor expenses. The higher the rate the more efficient the company in utilizing its intellectual assets. The main advantage of this approach is simplicity. Also, a company would be able to inefficiently utilize its labor resources, but that aspect might be covered by a more efficient use of other resources leading to a similar ratio.

Certain companies, in particular the Scandinavian ones, have developed their own evaluation methods. They assume at least a part of their consultancy income and therefore have a commercial interest in promoting their models. In other parts, the development and use of intellectual capital models is purely occasional. Continental Europe is probably the most advanced in this area, unlike USA and Great Britain, which show less advancement. The countries from the Pacific coast, such as Australia and Japan have recently shown significant progress on proposing intellectual capital evaluation models. Hence, among the individual models, we would mention: the Skandia Navigator Model, the Ericsson "cockpit communicator" Model, Celemi's Model for monitoring non-corporal assets (Sveiby), Ramboll's holistic Model and the IQ Company Model proposed by Bates Gruppen, which models we will detail as follows:

*1.The Skandia Navigator Model.* Of all intellectual capital evaluation systems, the Skandia Navigator model, developed in 1994, is probably the most familiar, even though it is applied exclusively by Swedish companies. This model presents four main dimensions of activity: financial dimension; customer dimension; process dimension and renewal and development dimension. In the center thereof lies the human dimension leading the entire model. There is a big resemblance to the BSC model. Indeed, Sveiby (1998) sees the Navigator as a combination of BSC and Celemi's non-corporal assets monitoring. Edvinsson claims that the Navigator model can be regarded „as a house”. „The financial dimension is the roof, the customer orientation and process dimension are the walls, the human dimension is the soul of the house, and the renewal and development dimension represent the foundation. With such a metaphor, renewal and development become the critical bottom lines for sustainability" (Edvinsson, 1997). Edvinsson compared intellectual capital with a tree. The ripe fruit resulting from seasonal efforts can be noticed in its corona – the annual financial report. „The human nucleus" from the trunk is protected by the bark of customer relations and working routines. Research and planning, which is needed for the tree to survive droughts and cold, is given by the root and its interaction with soil. In a reality marked by the quick and whimsical changes of business environment, the roots area is where the most important activities bearing fruits in the future can be encountered (Curaj, 2008). The value scheme developed by Skandia contains both financial and non-financial elements combined, with the purpose of highlighting a company's market value.

*2.The Ericsson "Cockpit Communicator" Model.* Ericsson, the Swedish telecommunications company, has developed a commercial product called "cockpit communicator", also based on the BSC model - Balanced Scorecard, having five perspectives extremely similar: innovation,

employees, process, customers and financial. Each perspective is represented by an aircraft cockpit and each having its own indicators. Monitoring the relevant entries for each indicator, the communicator suggests actions that can match the company's strategies.

3. *Celemi's Model for Monitoring the Non-corporal Assets (Sveiby)*. An international professional training consultancy company, Celemi, monitors three large groups: customers (external structure); people (competence) and the company (internal structure). The three key indicators are being monitored within each group, specifically development / renewal, efficiency and stability, each with its own performance indicators.

4. *Ramboll's Holistic Model*. Just like for other northern models, Ramboll's holistic model includes key fields where certain performance indicators are being managed. These key fields lead to three sets of results – customer, employee, and company – and all three combine to create financial results. The key fields are: values and management, strategic processes, structural resources as well as consultancy services. For example, the performance indicators for human resources are: personnel structure, personnel turnover and development of competences. These key performance indicators (KPI) are then divided. The ones related to creating competence, for example, are comprised of additional expenses, except salary, for professional training, amount spent on attending courses and amount invested in the employees.

5. *The Company IQ Model, proposed by Bates Gruppen*. Bates Gruppen is a Norwegian branch of Bates Worldwide and is part of the Cordiant Communications Group. Bates Gruppen has recently suggested a method which includes exclusively non-financial evaluation models. The Company IQ Model allows a company to compare its intellectual assets with those of a similar company. This method is more than an evaluation system; it requires the company to identify highly valuable assets, unique capabilities and intellectual related elements. While calculating its IQ, a company can discover it produces goods and supplies services which are similar to a competitor or contain features of low value for the customers. This will provide the company with a complete list of indicators, thus allowing it to take measures towards having a direct impact on its abilities to maximize profit.

Even though the previously presented types of models have been the subject of debate in time, we often ask ourselves „*Why is it so difficult to evaluate intellectual capital?*” The first reason is of historical nature. Accounting rules, although revised regularly, have been initially intended for certain assets like technical tools and factories - corporal elements representing an income source in the industrial age. Secondly, certain intangible assets are difficult to evaluate. Creativity, for example, lies at the core of a knowledge creation process, but remain an unpredictable process which can generate results in a similar unpredictable way. This aspect leads us to the third reason: the idiosyncrasy of intellectual capital. That which is valuable for a company can be useful for another company, various evaluation systems resulting, making difficult the comparison between companies and sectors.

## 5. Conclusions

Intellectual capital can ultimately have two dimensions: a static and a dynamic character, explained as follows (Meritum, 2002): „*Non-corporal resources belonging to a company, as static notion, can be evaluated at any moment. Hence, employees competences (human capital), intellectual property rights (structural capital) customer satisfaction or vendor agreements (relational capital) can be included in this category. Non-corporal resources can also be analyzed from a dynamic perspective. Companies develop activities in order to purchase or manufacture in-house non-corporal resources, in order to sustain or improve the existing ones and to evaluate and monitor them. These dynamic activities involve as such an allocation and use of resources which are not always expressed in financial terms, and therefore, can or cannot appear in financial reports.*” The dynamic nature of intellectual capital means that its composing elements do not have an independent value, but gain one if included in a system. In other words, the elements of intellectual capital and especially the interaction between them generate



value in a company. For example, a company can have good programming skills allowing it to create software. However, the company might have a small value unless it has a powerful distribution network, loyalty and devotion from its employees and a powerful trademark. This dynamic combination of non-corporal elements is often the recipe for the success of companies such as Microsoft, where the value of intellectual capital represents more than the sum of its individual elements.

The presented approaches offer a general idea on the range of methods, disciplines and operational specializations existing for the evaluation of intellectual capital. Only one of them - Balanced Scorecard – is largely used, while the rest of the methods remain too theoretical or too poorly developed to be universally accepted. We believe that the efforts from the regulation and standardization bodies in the view of intellectual capital evaluation are too small, despite the fact that community shows an increased interest in this sense, many companies being tempted to build their own system of evaluating performances with regards to intellectual capital.

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